

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE BEFORE THE
BOARD OF PATENT APPEALS AND INTERFERENCES**

Applicants: Terence Edwin DODGSON et al. **Group Art Unit:** 2611
Serial No.: 10/648,560 **Examiner:** Dac V. HA
Filed: August 25, 2003 **Date:** May 30, 2008

For: **INTEGRATED MODULATORS AND DEMODULATORS**

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Commissioner for Patents
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APPELLANTS' REPLY BRIEF

Sir:

In response to the Examiner's Answer mailed March 31, 2008, Appellants respectfully submit that based on at least the arguments provided in the Appeal Brief of January 9, 2008, Claims 1-18 are patentable over the applied references. The following comments are respectfully submitted in order to address statements made in the Examiner's Answer.

With respect to Claim 1, on page 3 of the Examiner's Answer, the Examiner contends that *Womack* implicitly discloses that the 'device' is also responsible for transmission to the PMU of the base receiver on a forward channel, and that *Womack* teaches a device capable of modulating and demodulating data using multiple modulation formats using a 'common digital modulation component.' The Examiner contends that a system controller, a transmitter and a base receiver of *Womack* act collectively as the 'device,' and that the system controller acts as the 'common digital modulation component.'

Claim 1 recites that the device modulates and demodulates data for transmission from a first device to a second device, and that the device comprises modulating means for modulating and demodulating data according to first and second modulation techniques using common digital modulation components.

Womack describes the controller, transmitter, receiver device collection as an infrastructure or system, and not as a single modulating device as the Examiner contends. Further, this device collection of *Womack* fails to modulate and demodulate data for transmission from a first device to a second device. More specifically, if the infrastructure of *Womack* is the modulation device, *Womack* fails to disclose first and second devices, separate from the modulation device, between which data is transmitted.

Common digital modulation components are not utilized for both modulating and demodulating in the device collection, or system architecture, described in *Womack*. The system controller of *Womack* controls the actions of the transmitter and receiver, but does not modulate and demodulate data itself using its own digital components. Further, the transmitter and receiver of *Womack* are shown as separate devices, each having their own digital components. For example, the digital components of the receiver only demodulate data. *Womack* fails to provide any disclosure of digital components utilized to both modulate and demodulate data. Thus, the architecture of *Womack* fails to provide common digital modulation components for modulating and demodulating data according to first and second modulation techniques, as recited in Claim 1.

Claim 1 also recites that the modulating device further comprises a switching means for automatically switching between at least the first and second modulation techniques.

Because the Examiner relies on the theory of inherency in rejecting this element of Claim 1, the Examiner admits that a switching means is not explicitly disclosed in *Womack*. The Examiner contends that because a receiver is described to be able to handle virtually any

modulation type, it implies that there must be a capability of changing from one modulation format to another. Appellants assert that the ability to handle different modulation types does not imply that there must be a capability to switch between modulation types. Instead a receiver may initially adapt to a first received modulation type, and then remain permanently programmed for that modulation type. Therefore, while this receiver may initially be capable of handling any modulation type, it also does not require a means for automatically switching from one modulation format to another.

In relying upon the theory of inherency, the Examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art. The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic.

In an example supplied by the Examiner on page 5 of the Examiner's Answer, a flexible resource is allocated to demodulate a received signal in a first modulation format when receiving a signal from a first PMU having a first modulation format. However, *Womack* provides no support for a situation in which a different PMU having a second modulation format transmits to the receiver; thus there is no teaching or suggestion in *Womack* that a change occurs. Instead, it is possible that additional PMUs having the same first modulation format are assigned to the receiver after the receiver has initially adapted to the first modulation format of the first PMU.

Independent Claims 17 and 18 contain similar subject matter to that of Claim 1, and are patentable for at least the reasons presented above. Also, while not conceding the patentability of the dependent Claims 2-16, *per se*, Claims 2-16 are also allowable for at least the above reasons.

Claim 4 recites that a programmable finite impulse response filter is programmable to a first and second mode for the first and second modulation techniques, respectively. The Examiner contends, on page 7 of the Examiner's Answer, that because *Womack* discloses that when different modulation formats are used, a different FIR routine is required, that *Womack*

implicitly discloses the claimed subject matter. However, the Examiner has mischaracterized the teachings of the reference. *Womack* discloses that “[f]or demodulation of quadrature amplitude modulated (QAM) signals, different software routines as well as the FIR filter routine (611) are required.” *Womack* does not teach or suggest the requirement of a different FIR routine for different modulation formats. Thus, while *Womack* teaches the use of a FIR filter routine, it fails to disclose a FIR filter programmable to a first and second mode, as recited in Claim 1.

Accordingly, Appellants assert that since the Examiner has failed to make out a *prima facie* case for the anticipation and obviousness rejections, the rejections of Claims 1-18 must be reversed.

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